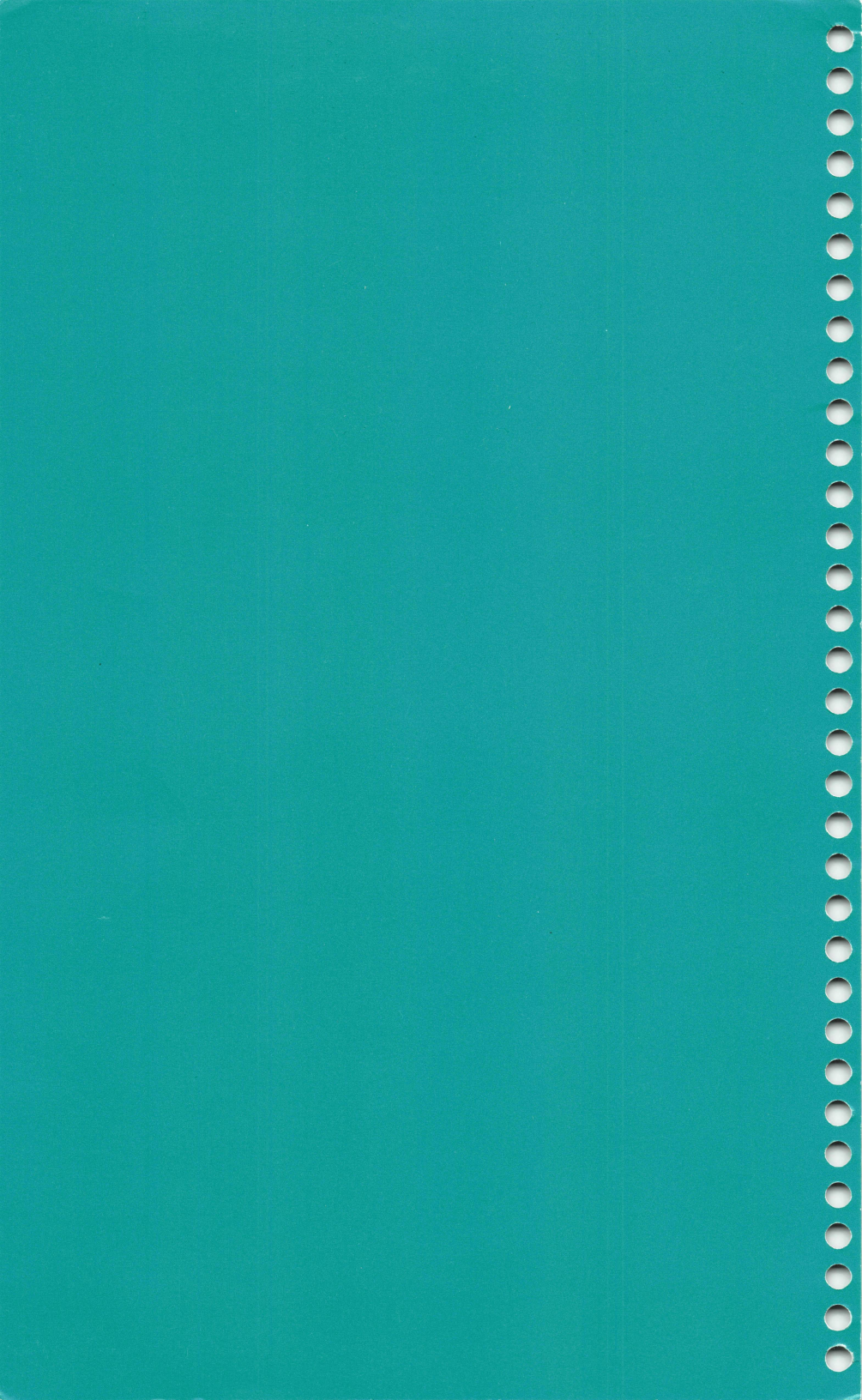


USERS GUIDE

 **fieldworks**[®] inc.





**FW7300A/FW7620A
FW7633P/FW7666P
Field WorkStation®**

User's Guide

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PREFACE

Before proceeding to other sections of this manual, please read the precautions appearing on the next two pages.

This manual describes the FieldWorks 7000 Series Field Workstation™ which is MSDOS, WINDOWS 3.x, WINDOWS 95, and WINDOWS NT compatible (trademarks of Microsoft Corporation). The 7000 Series workstation can have a 100MHz Pentium processor with three expansion slots (7300A), 120mhz Pentium processor with six expansion slots (7620A), 133MHz Pentium processor with three ISA and three PCI expansion slots (7633P), or a 166MHz Pentium processor with three ISA and three PCI expansion slots (7666P). (Pentium is a trademark of Intel Corporation.) All processors have internal cache memory built into the processor plus an external cache memory socket for 512K of external caching memory (option). The 7000 Series WorkStation uses Award BIOS (trademark of Award Software, Inc.).

FCC INFORMATION

The CD-ROM drive used by the Field WorkStation has been type tested and found to comply with the limits for a class B computing device, in accordance with the specifications in Part 15 FCC Rules which are designed to provide protection against radio and television reception interference in a residential installation.

CAUTION

The laser beam used by this CD-ROM drive unit can be harmful to the eyes. Never look directly at the laser read head while changing CD-ROM discs.

ACHTUNG

Der Laserstrahl des CD-ROM Laufwerks kann Ihren Augen schaden. Beim Wechseln der CD-ROM Platte nie direkt in den Lesekopf des Lasers schauen.

WARNING

Never use any optical instrument in conjunction with this unit. To do so will greatly increase the hazard to your eyes.

WARNUNG

Benutzen Sie nie optische Gerate in Verbindung mit dem Rechner. Die Belastung der Augen durch den Laser wird dadurch stark erhoeht.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ACHTUNG

Explosionsgefahr bei einfachmaessig ausgewechselter Batterie. Batteriewechsel nur mit gleichen oder aehnlichen, vom Hersteller empfohlenen, Batterien.

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QUICK START

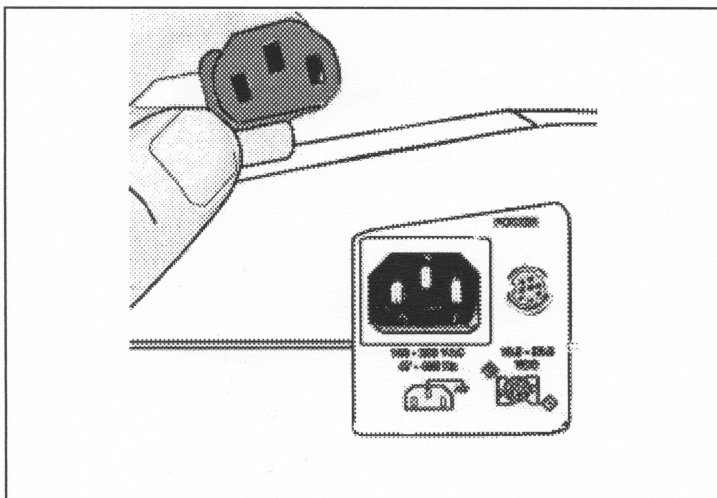
Open the shipping box. You will see a black computer box inside that is cushioned on two sides. Look for a package of manuals and software. They should be on top the computer box (or along its side). If you ordered options, they too will be on top the computer box. Remove them and put them aside in a safe place.

Remove the cushions from the end of the computer box. Open the box and save the tube-shaped cardboard that is positioned over the computer handle. Don't throw this cardboard away because the AC and DC cords are inside. Locate and remove these power cords.

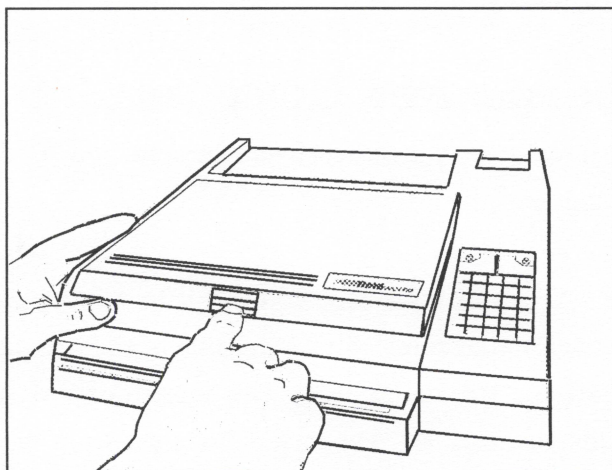
Try Out Your New Computer...

You don't have to install the software because that is done for you at the factory.

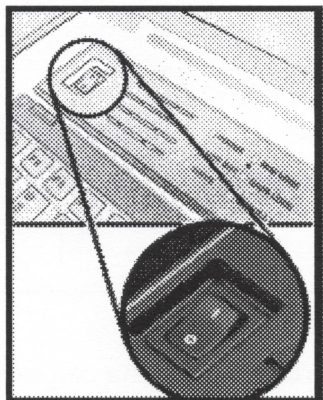
Locate the AC power cord and connect it to a 3-pin grounded wall socket and to the connector on the side of the computer (see next illustration). [If you are using DC power (10.5 to 30VDC), the DC adapter can be connected to the 8-pin connector immediately to the right of the AC pins.]



Open the computer lid by pressing the centrally located button-release and raising the lid, as shown in the next illustration.

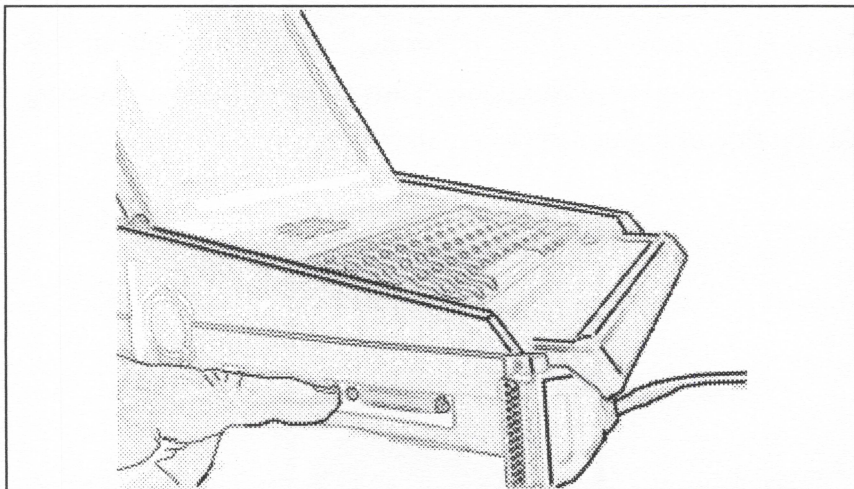


The On/Off power switch is located at the top left of the keyboard (see next illustration). Turn on the power by pressing the top side of the switch (where the "1" is).

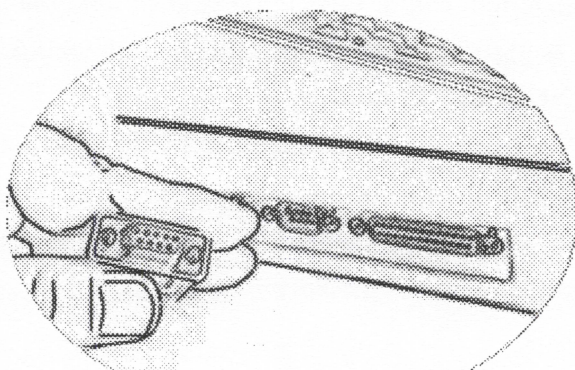


The LEDs will blink and the screen will flash characters indicating that the BIOS is being installed and the installed memory is being checked. When finished checking memory, DOS or WINDOWS will be started.

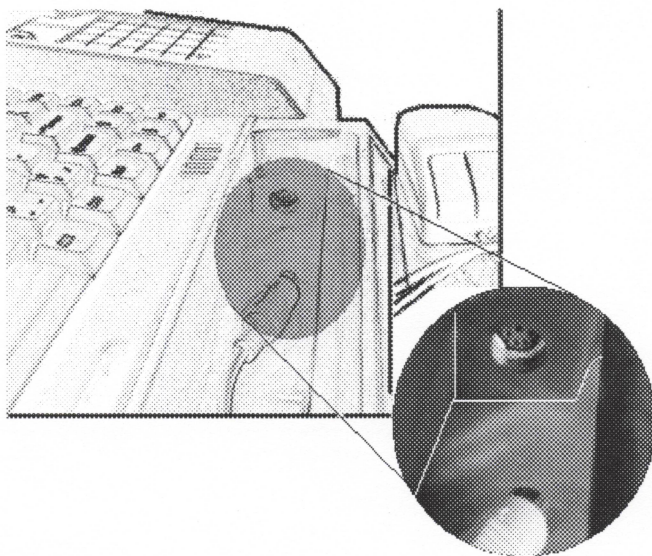
If you are going to print documents/graphics, you will want to know where the printer parallel and serial ports are. The computer's parallel port is the 25-pin connector illustrated in the next figure.



If your printer is a serial printer, you can use COM1 or COM2 ports on the computer. COM1 is the 9-pin connector next to the parallel port. COM2 is the 9-pin port next to COM1 (furthest away from the parallel port).



Your FieldWorkstation includes separate mouse facilities to handle all configurations, without having to tie up COM1. There is the built-in mouse, with drag and drop lock and click spots, located to the right of the keyboard. And, if you wish you can connect an external mouse to the workstation using one of the PS2 connectors on either side of the built-in mouse (see next illustration).



After you start your first session, you can find out more about your workstation by reading the rest of the user manual that follows.

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INTRODUCTION

The Field WorkStation™ is the first professional computing platform designed specifically for professions requiring high-powered mobile computing in a lightweight, ruggedized design. The Field WorkStation is designed to take a beating in the field or in any precarious environment not recommended for common electronic equipment.

The Field WorkStation meets and exceeds the requirements specified in Mil Spec 810C for military electronic equipment. Fieldworks computers survive extensive testing and meet tough design criteria; and then prove themselves again and again in mission-critical field applications.

Building a rugged computer takes careful planning. We start by selecting components that can function in adverse environments. We then design structures to house and protect them from shock, water, and extremes in temperature. As in the spacecraft industry, we achieve high strength and low weight through the use of a magnesium and aluminum structure. Only the industry's fastest processors are selected - currently the Pentium - providing state-of-the art speeds under AC (Mains), Battery, or 12VDC input power (with optional DC adapter for 10.5 to 30.0 VDC operation in a vehicle). Care is taken to find the best arrangement for all components, so they are protected.

Options, including a CD-ROM, PCMCIA cards compatible with types I, II, III, and IV, choice of active or passive SVGA Color Screens, the unique Field MousePad™ technology, removable hard drives and others (please call for latest update).

Standards/Specifications

General

EMI CE mark standard
ISO 9000 certified
FCC, UL, CSA compliant

Specifications (continued)

Basic Unit:

Processor:	Up to 166mhz Pentium
BIOS:	Award
RAM:	8Mb - 128Mb max
Cache	Zeo or 512K
PCI/ISA Slots:	3 PCI and 3 ISA slots 3 full ISA slots (7300A) 6 ISA slots (7620A)
Keyboard:	85-Key QWERTY Keyboard
Interfaces:	VGA/SVGA Monitor Port 2 RS232 Ports 1 Enhanced Bidirectional Parallel Port External Keyboard Port (PS/2) External Mouse Port (PS/2)
Display:	640 x 480 Color VGA 10.4" Dual-Scan Passive LCD, or 800 x 600, TFT 256-color; plus an external SVGA Port with 24-bit color support
HDD:	Up to 2.1Gb
FDD:	3.5" 1.44Mb
PCMCIA:	Type I, II, III and IV
Pointing Device:	Field MousePad™ Mouse and Signature Pad
Power Supply:	100-250 VAC @ 47-400Hz or 12 VDC Source Power available to backplane
Cabinet:	Shock mounted electronics in a magnesium and rubberized aluminum cabinet

Specifications (continued)

Weight:	14.5 lbs (7 kg)
Size (cm):	Width 15.0" (38.1) Depth 15.4" (39.26) Height 3.75" (9.19)

Environmental

Temperature (Operating): -4°F* to 122°F (-20°C* to 50°C)

Temperature (Storage): -4°F to 140°F (-20°C to 60°C)

Humidity (Operating): 10%-80%, rel. humidity, non-cond.

Humidity (Storage): 5%-95%, rel. humidity, non-cond.

* with CD-ROM option -10°C; Display degradation (slower response time);

Shock: Mil-Std-810C 516.2

High Intensity: 100 G's, 6 msec, Operating, Procedure IV

Crash Safety: 60 G's, 6 msec, Operating, Procedure III

Basic Design: 30 G's, 11 msec, Operating, Procedure I

With CD-ROM: 30 G's, 11 msec, Non-Operating, Procedure III

Vibration: Mil-Std-810C 514,2 Procedure X

5Hz-200Hz-5Hz @ 12 minutes, 84 minutes per axis

5-7Hz @ 1-inch displacement

7-92Hz @ 2.5 G's

92-110Hz @ .0058 inch displacement

110-200Hz @ 3.5 G's

Note: All tests performed sequentially to the same unit. Shock testing performed first and Vibration testing second.

CD-ROM: Model CD-38E

Operating Performance

1. Average random access time: 190 msec (8X speed)
2. Disc rotation speed
 - Inner circumference: 4240 rpm
 - Outer circumference: 1600 rpm

Specifications (continued)

3. Data transfer rate

- Average sustained (8x speed): 1.2Mbytes/sec
- Burst: 16.7Mbytes/sec max. (PIO mode 4)
- DMA: 16.7Mbytes/sec max. (DMA mode 2)

4. Approved: UL, CSA, TUV

Audio

The following line output specifications apply during audio play at normal speed (x1):

- Number of channels: 2 channels (stereo)
- Frequency response: 20 ~ 20kHz (+2/-4 dB)
- Dynamic range: 75 dB or more (IHF A, 1KHz)
- S/N: 75 dB or more (IHF A, 1KHz)
- Distortion factor: 0.06% or less (BPF 400Hz ~ 20KHz, 1kHz)
- Channel separation: 68dB or more (BPF 400Hz ~ 20kHz, 1kHz)
- Output level: 0.85V rms \pm 3dB (load = 47K Ω ATT = 0dB)
- Muting: each channel independent (using the ATAPI command)
- Volume: Software volume using the ATAPI command, 15 steps from volume level 0 ~ - infinity dB, variable for each channel independently.

Environmental Requirements

The environmental conditions specified here do not include the environmental requirements of the disc.

Ambient Temperature

- During operation: 5 ~ 51.7°C (41 ~ 125°C)

Relative humidity

- During operation: 8 - 80% (noncondensing) provided that the maximum wet-bulb temperature is 29.4°C (85°C) or less.

Vibrations

- During operation, when installed horizontally: 0.2G or less.
- During Non-operation(packaged for transportation): 2G or less, provided that the sweep frequency is 5 ~ 300Hz and sweep.

Specifications (continued)

Shock

- During operation (free from malfunction): 5G or less (half-sine wave 11 msec.) excluding the time while the CD-DA is playing.
- During Non-operation: 60G or less, (half-sine wave 11 msec.).

Dust: Office environment.

Cooling: natural air cooling.

HARD DRIVE RELIABILITY

- Mean-time-between-failures (MTBF): 60,000 power-on hours or more (the frequency of use should be 20% at normal temperature and humidity with the frequency of seek being 5% of it)
- Mean-time-to repair (MTTR): 30 minutes
- Loading/ejecting life: 10,000 times or more
- Power on/off life: 60,000 times or more
- Error rate:
 - Read error rate, Mode 1 and Mode 2 (Form 1): once per 10¹² bits or less
 - Read error rate, Mode 2 (Form 2 and CDDA: once per 10⁹ bits or less
 - Seek error rate: once per 10⁶ seeks or less
- Self-diagnosis
 - When power is switched on: Various controllers, ROM, RAM, buffer, ECC circuit, etc.
 - When disc is inserted: Servo circuit, signal processors, etc.

SAFETY STANDARDS

The drive complies with the following safety standards:

- UL standard
- CSA standard
- TUV standard
- SEMKO standard

Options

Various options are available for the Pentium computers. Please call FieldWorks Inc. Sales Support at the main office in Minneapolis, MN, (612) 974-7000.

Please review the following information to ensure that you have received everything you have ordered.

Unpacking the Field WorkStation™

After opening the carton you will find the following standard items:

- (1) Field WorkStation
- (1) Field WorkStation User Manual and Warranty
Registration Card
- (1) MS-DOS Operating System Package
- (1) AC power cord
- (1) DC power cord

Getting Started

As a minimum, the Field WorkStation is shipped with the latest version of MS-DOS installed. Please review the following procedures before getting started.

How to open the display:

- Position the unit with the handle facing you.
- Press the release button located front and center at the delta-triangle symbol, and raise the display to a convenient viewing angle.

Power (AC/DC) Connectors

The Field WorkStation is equipped with an internal international auto-switching power supply capable of adjusting to the AC (mains) power source. The Field WorkStation can also be powered while in transit using its DC battery power pack. An optional adapter is available for plugging the unit into a vehicle's 10.5 to 30VDC input.

How to power on the Field WorkStation:

- Insert either the AC (100-250VAC 47-400Hz) or DC (12VDC) power cord (or optional adapter) into the appropriate receptacle. (The optional adapter can be used to provide 10.5 to 30.0 VDC to the unit.)
- Insert the power cord into the power source.
- Press the power switch to the on position "1".
- The unit will perform power-up diagnostics and then display the MS-DOS "C" prompt (**C:>**) unless configured otherwise.

7000 Utilities

All utilities are DOS programs that can be executed at the DOS prompt. Turn power on. The system will boot and immediately run WINDOWS 95. Click on "Start". Click on "Programs". Click on "MS-DOS Prompt". When the DOS prompt appears in the window, type `cd \fwsupp` and press Enter key. Type `dir` and press the Enter key. One of the directories you will see is "UTIL".

Type "`cd util`" and press Enter key. This will display five utilities discussed here and a readme file.

AWDSETUP.COM

If you type "`awdsetup`" and press the Enter key, the CMOS SETUP UTILITY will open. You can then select/change the various settings. We caution you to make only changes that are necessary for your configuration. Always remember what you did so you can undo any inadvertent changes that cause your system to function different than you wanted. (If your system malfunctions, cycle the computer off and then on. When you see "Press DEL to enter setup", press the Del key. You can then change the BIOS configuration to the previous settings.)

CRT.EXE

If you type `crt` and press the Enter key, the system will turn off the panel display and turn on an external monitor attached to the VGA/SVGA port. If you wish to turn the panel display back on, type `panel` and press the Enter key. (If you don't have an external monitor, and you turn off the panel display, you will have to type `panel` and press Enter on a blank screen.)

SIMUL.EXE

If you type `simul` and press the Enter key, the system will turn on the external monitor and the panel display.

PANEL.EXE

Type panel and press the Enter key to turn on the display panel.

FAN ON

Type fan on and press Enter to turn on the chassis cooling fan.

NOTE

Fan is always on with the 166mhz Pentium unit (FW 7666P)

FAN AUTO

Type fan auto and press Enter to turn on the auto function.

In this mode the fan will come on when the temperature exceeds the level set at the factory. It will shut off when the temperature falls below the level set at the factory.

Software Backup

The Field WorkStation is shipped with MS-DOS as a standard feature and Microsoft Windows as an option. A user manual is shipped with the product that covers these software packages; however, individual distribution diskettes for each package are not. Instead, the contents of each of the distribution diskettes for both packages are contained within subdirectories with the names, *DISK1*, *DISK2*, etc. The '*DISK*' subdirectories can be found under the respective package subdirectories (DOS and/or WINDOWS). Eight diskettes are required to back up WINDOWS.

Copy each '*DISK*' subdirectory to floppy diskette as soon as possible after the Field WorkStation is turned on. This insures you will have a backup set should you need it. Once the subdirectories have been copied onto floppy diskettes the user can remove the '*DISK*' files and subdirectories from the hard disk drive if more disk space is needed.

Using the Battery Pack Option

The Field WorkStation can be operated fully independent of external power sources using the optional rechargeable battery. The battery is specifically keyed for quick installation and uses captive quick-turn fasteners for secure mounting.



Field WorkStation Battery Pack.

The battery pack has the charging electronics integrated within the pack. This "smart battery pack" will charge off of the AC or DC power sources, requiring no external battery charger. The battery pack will charge as long as input power is connected, and the power switch is in the off position (0 down). The battery will quick-charge in one hour. The charger will continue to trickle-charge the battery after it is fully charged.

Low Battery Warning

The LOW BAT indicator will start flashing several minutes before the Field WorkStation shuts down. You will have ample time to close your applications before the unit shuts down. Then, the "LOW BAT" light will blink and a beeping sound will occur when there is less than one minute of battery life. The Field WorkStation has many power-saving configuration options (see Power Management Setup Menu).

Display Combinations

Before we describe the display options, we must be sure you are aware of two "external" display conditions. One is described here, where an external monitor is attached to the 15-pin VGA connector on the right side of the unit, under the mouse. The other is where the user installs an external display adapter in the unit's backpanel. If the unit has an installed display adapter in one of the backpanel slots, that adapter will always be the active display controller, and the CRT panel will not work. The display connected to the adapter will be active.

If there is no external display adapter in the backpanel, the unit will start with both the LCD Panel and the VGA connector active so that the BIOS POST display and CMOS setup will be accessible. After BIOS POST, and before the operating system is loaded, the display mode selected in CMOS setup will be activated.

After the operating system has been started, the display mode can be changed. There are three software utilities, "CRT, Panel, and Simul" which can be used to change the display mode:

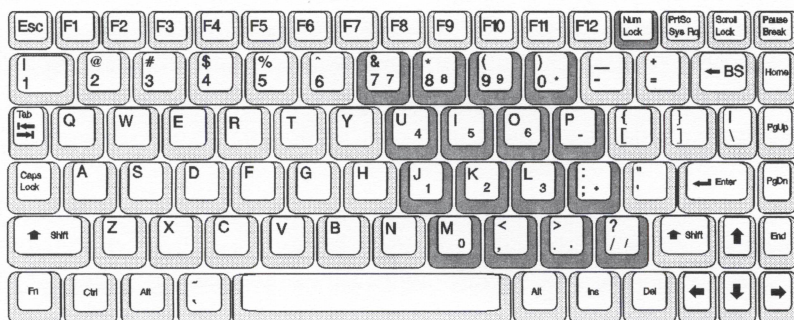
LCD Only - Use Panel software for setup.

LCD/CRT Simul - where an external monitor and the LCD is used simultaneously; use Simul software for setup.

CRT - where an external monitor only is used; use CRT software for setup.

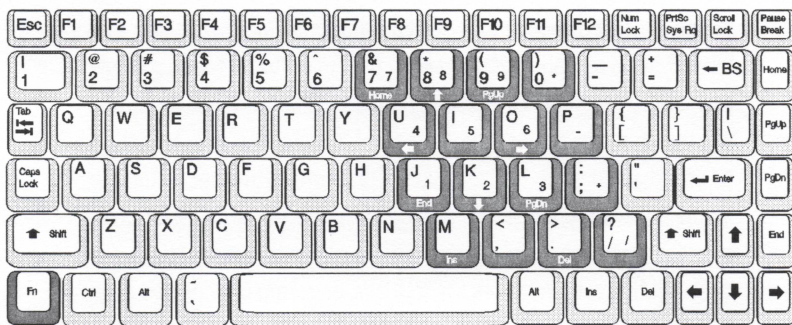
The Keyboard

The Field WorkStation uses an 85-key keyboard. The alphanumeric and function keys (F1 - F12) are all first function keys. No additional keys need to be pressed to use these keys. The numeric keypad is imbedded in the alphanumeric keys and requires the (num lock) key to access their use. Pressing the (num lock) key will lock the numeric keypad on. The (num lock) LED indicates that the numeric keypad is locked on.



Field WorkStation Numeric Keypad.

The function (Fn) key illustrated on the next page can be used to access another alternate set of cursor control keys. The (Fn) key must be depressed while the cursor key is pressed. Although the captions illustrated on the front edge of the keys do not actually appear on the keys, the illustration shows where the cursor functions can be found. The Home, up-arrow, and PgUp functions are assigned to (7), (8), and (9), respectively, (again, when (Fn) is pressed).



Field WorkStation Function Keys.

The left-arrow and right-arrow functions are assigned to (U) and (O), respectively. The end, down-arrow, and PgDn functions are assigned to (J) and (K), and (L), respectively. Finally, ins and del functions are assigned to (M) and (.), respectively, (again, when (Fn) is pressed).

Using An External Keyboard

You can use any PS/2 style keyboard. Once the external keyboard is connected, both keyboards are fully operational. Note that before connecting an external keyboard, make sure that the Field WorkStation power is off and you align the connectors carefully. There are two PS/2 keyboard/mouse connectors located below and on both sides of the Field MousePad™ (the left is keyboard only; the right is mouse only).

The Shadow Knows

What is shadowing and how is it different from caching? If you are new to personal computers, these terms, shadow and cache, are probably new to you also. Shadow and cache are schemes used to speed up data processing. Most processors have internal cache memories, and the Pentium has another external cache memory. In addition, most systems have ROM BIOS chips that use shadowing and which allow the user to set up shadow memories. Because RAM is faster than ROM, the BIOS programs will transfer portions of their program for execution in RAM. This is called shadowing. The relative location is the same for the instructions, only the physical location changes to a faster chip, and the processor can access the instructions faster. Hardware caching, however, involves the use of a separate chip (which is as fast as RAM), but in caching, the processor uses the cache as a storage buffer for data that it uses often. Then, the processor always has the data "at its finger-tips" instead of having to access RAM to seek, find, and read it out of its memory, which is much larger and therefore takes longer to search. (Software disk cache is another scheme that speeds up accessing information from hard drives; but here, a software program samples the reads and then keeps a copy of often-read information locally in RAM, thereby saving disk accesses which are relatively slow and measured in milliseconds.) (Don't confuse any of this with RAMDISK, which is a scheme where users define fast RAM as another drive that can hold programs and data but respond much faster than a hard drive.)

THE FIELD MOUSEPAD™

On the right side of the Field WorkStation is a rectangular black area marked with a grid and buttons. This is the Field MousePad™. Notice that the size and shape of the flat mouse mimics the general size and shape of a normal desktop two-button mouse.

Operating the Field WorkStation MousePad™ is very simple. After starting an application that uses a mouse, touch your fingertip onto the area marked with a grid and slide it around. You should see the mouse pointer on the display following your motions. Only a moderate amount of pressure is needed to operate the mouse. Apply as much pressure to the mouse as is comfortable. The Field MousePad™ is rugged and cannot be damaged by pressing too hard with your finger. Experiment using the tip of your finger to see exactly how much pressure is required. You may find that using your fingernail provides more precise positioning.

If your finger reaches the edge of the mouse and you need to continue moving the pointer farther in the same direction, simply lift your finger and place it back in the center of the grid, then continue the motion as before. The mouse will pick up where it left off, and continue moving in the proper direction.

Mouse Buttons

Above the grid are the left and right mouse buttons. The Field WorkStation mouse buttons need only a moderate touch to operate. You may click and double-click them exactly like a normal desktop mouse, although it's really more of a tap and double-tap.

To make click-and-drag operations easier, we have provided each mouse button with a lock. (The lock is the small area of each button with a padlock symbol on it.) When you touch the lock, the result is as if you were continuously holding your finger down on the mouse button. This allows you to lock the button on and then drag the object to where you need it. To unlock the button simply touch and release in the main button area.

Mouse Settings

In WINDOWS, you can change the way the mouse works using the Mouse Manager. You can specify the orientation of the mouse (which way is up), and also change the function of each button (right is left and left is right for all of you left-handers). You can also change the size of the arrow, its color, and sensitivity (how far it moves in relation to mouse movement).

Using as a Signature Pad

While the Field MousePad™ was designed to be used with a fingertip, you may also use a stylus if you prefer. The stylus can be any pen-shaped object. It is best to pick one with a rounded tip to avoid scratching or denting the mouse surface.

The Field MousePad™ is also intended to be used as a signature pad with custom applications that capture a signature from a customer or client. In these applications a stylus is normally used for input.

Cleaning the Field MousePad™

The Field MousePad™ is impervious to most common contaminants. Keeping it clean is important mainly to preserve a nice smooth feel. Simply wiping it off with a damp cloth will work fine. Heavy accumulation of dirt may require use of a household cleaner.

Using an External Mouse

You can use any PS/2 style mouse with the Field WorkStation. The Field MousePad™ will be disabled automatically when the external mouse is connected. To re-enable the Field MousePad™, remove the external mouse and reboot the unit by pressing [CTRL] [ALT] [DEL]. Note that before connecting an external mouse, make sure that the Field WorkStation power is off. The PS/2 mouse connector is located below and on the right side of the Field MousePad™.

The Chip Killer

Static electricity can generate thousands of volts of electricity that can destroy electronic chip circuits. Don't touch any component inside a computer unless you have a need. Then do it only with precaution. Use grounding straps if you have them; otherwise ground yourself by touching bare metal on the chassis metal before you touch a component (**after power has been turned off**).

CD-ROM

CAUTION

Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Specifications and features subject to change without prior notice or obligation.

CAUTION

The laser beam used by this CD-ROM drive unit can be harmful to the eyes. Never look directly at the laser read head while changing CD-ROM discs.

The CD-ROM drive used by the Field WorkStation has been type tested and found to comply within the limits for a class B computing device, in accordance with the specifications in Part 15 FCC Rules which are designed to provide protection against radio and television reception interference in a residential installation.

CD-ROM Drive Precautions

Drive Precautions — Use only CD-ROM discs that bear the COMPACT DISC logo. During operation, a sudden impact to the CD-ROM drive unit or excessive vibration may cause the drive to stop operating. Never place any item on top of the disc tray.

Disc Precautions — Avoid touching the bottom surface of the disc. Always handle discs by their edges. Never write on a disc with a hard object, such as a ball-point pen or pencil and never affix any label directly on a disc. Never bend a disc. Do not expose discs to direct sunlight and avoid storing them in areas subject to high temperatures or humidity. Always store a disc in its case to avoid dust contamination, scratches, bending or other damage.

CD-ROM Drive Maintenance

The CD-ROM drive itself does not require any maintenance, but for best results, periodically wipe each disc with a soft, dry cloth, gently rubbing outward from the center. Never use fluids such as Benzene, record cleaning fluid, or anti-static fluid. Use of such fluids can damage the drive mechanism or the lens.

CD-ROM Drive Installation

The installation diskette contains all the software needed to install and operate the CD-ROM drive. The CD-ROM software is factory installed. If you should have to re-install the CD-ROM software, use the following procedure. Before you run the program, make sure you are not running WINDOWS or another program.

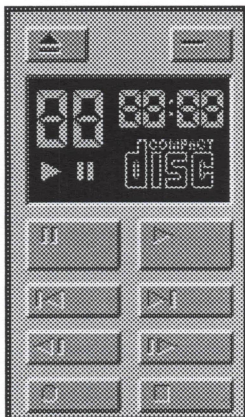
1. Go to the C:\FWSUPP\CD-ROM\SETUP subdirectory.
2. At the DOS prompt, type SETUP and press the Enter key.
3. Follow the program prompts.

The program will start WINDOWS and lead you through to process.

Playing Audio CDs

The CD player can play audio CDs as well as data CDs, from WINDOWS or DOS. The 7000 Series Field WorkStations need a sound card.

To play audio CDs in DOS, go to subdirectory containing the CDPlayer files (C:\FWSUPP\CDROM), type CDPLAYER and press the Enter key. The Compact Disc Digital Audio control panel graphic appears on the screen.



To play audio compact discs from WINDOWS on a Field WorkStation, click the play button (triangular arrow-head pointing to the right).

Click the button with the double-vertical bars to pause.

The arrow-heads with the single bar (at the point) identify buttons used to skip forward and backward.

The buttons with arrow-heads followed by a vertical bar are use to rewind and fast forward.

The two buttons at the bottom are used to stop playing (button with square) and to select and play a track. To select a track, click the button with the black (filled) circle on it. The following will appear:



Player Display Indicators

The large number in the digital display indicates the current track. The half-size digital display further to the right indicates the elapsed time. Under the track indicator appears two symbols which indicate whether the player is paused or playing (in this illus., the symbols do not appear because the control is not paused or playing, but waiting for a selection). If you wish to select a specific track, you click the +10 button once for each multiple of ten you need for your track number and then click the number button indicating the exact track.

For example, if you wish to select track 3, simply click the 3 button; to select 13, click the +10 button once followed by the 3 button; and to select 23, click the +10 button twice followed by the 3 button; and so on. As soon as you click the last digit button, the program will search and play that track.



EXPANSION CAPABILITIES

The following subsections provide information on the various expansion capabilities of the Field WorkStation.

Using an External VGA/SVGA Monitor

An external super video graphics adapter (SVGA) interface provides connection for an external monitor. You can control the external monitor (CRT) and the internal LCD (Panel) with a series of programs. These programs reside in the *UTIL* directory and are: *PANEL*, *CRT*, and *SIMUL*. The *PANEL* program enables only the LCD display. The *CRT* program enables only the external CRT monitor. The *SIMUL* program enables both the CRT and the LCD. When using Microsoft Windows, use file manager to drag these program files into your accessories program group and create icons for them.

ECP/EPP Parallel Port

A parallel port on the left side connects the unit to a printer; but it can be used also as an enhanced bidirectional interface. (See Onboard Parallel Mode in the Chipset Features Setup Menu.)

Serial Ports

Two serial ports are provided for connection to serial devices like a modem. These bidirectional ports will allow you to transfer data at high speed.

PCMCIA Slot

The PCMCIA slot will accept any type (I, II, III, or IV) of PCMCIA device available. This provides a great deal of flexibility in selecting PCMCIA devices. The PCMCIA device slips easily into the recessed area on top behind the display.



PCMCIA Slot

HARDWARE INSTALLATION

CAUTION: Electrostatic Discharge (ESD) precautions should be taken when performing the following procedures on the Field WorkStation.

- Unplug the unit from the power source.
- Remove the optional battery if present.
- Place the unit on a properly grounded conductive surface.
- When performing procedures make sure that you are properly grounded with a wrist strap or other device.
- Do not open unit until properly grounded.
- Leave components in their anti-static containers until needed.

XT/AT ISA/PCI Card Installation

To remove or replace an ISA or PCI cards, such as a scientific instrument controller or adapter card, use the following procedure.

- 1) Facing the rear of the unit, press the two release buttons to gain access to the auxiliary card compartment. You will notice that there are three PCI card slots on the left and three ISA slots on the right.
- 2) Remove the screw that holds the auxiliary card "L" bracket to the base of the unit.

- 3) Insert/remove your card, making sure the card is perpendicular to the motherboard/card slot.
- 4) Replace the screw that holds the auxiliary card "L" bracket to the base of the unit.
- 5) Insert the appropriate foam rubber auxiliary card support blocks supplied with the Field WorkStation to support the far end of the auxiliary card.
- 6) Close the auxiliary card compartment door.

RAM Memory Installation

Because the Pentium system bus is 64-bits wide, and the SIMM modules are 32-bits wide, SIMM modules must always be installed in pairs. Each SIMM module in a pair must match the other in size, but the pair can be different in size from the other pair. If only one pair of SIMMs is installed, they must be in sockets 1 and 2 or 3 and 4.

SIMMs are numbered consecutively from socket 1 through socket 4. Always add SIMMs to the lowest number socket, beginning with socket 1, which is furthest from the handle. To increase the amount of RAM memory, add new SIMMs to empty sockets or replace the existing SIMMs.

CAUTION

Inserting the SIMM backwards in the slot will
destroy it and may damage the computer.

Notice that there are release/lock levers on each end of the SIMM socket. Each SIMM is installed contacts-down with the chip side of the strip facing the back of the unit. The new SIMM is leaned toward the front as it is positioned in the socket that receives the contacts on the bottom edge of the SIMM. When the SIMM is correctly positioned, it can be rocked gently upward and backward until it locks into the release/lock levers. (Keep the SIMM level in the slot as it is being rocked into position.) In the locked position, the strip is vertical and perpendicular to the mounting board.

- 1) Press the display release button and open the display.
- 2) Press the keyboard release buttons and open it all the way up.
- 3) Remove the screw securing the small access cover. This will provide access to the SIMMs strip sockets.
- 5) Replace the access cover and tighten the screw.
- 6) Close the keyboard.
- 7) Restore power. During power-up, the memory test line will show the correct amount of installed memory.

Cache Memory Installation

Between the RAM modules and the Pentium processor resides a single brown socket reserved for cache memory. This socket can hold one 256K or 512K memory module. Unlike the SIMM modules, the cache module is held straight and perpendicular to the motherboard, and is inserted using a straight downward push. The guide near the middle of the socket is slightly off-center so you can easily see the correct alignment. The socket supports cache modules that are compliant with the COAST 1.2 Specification. **(The system is configured for synchronous cache if no cache is installed when the computer is shipped.)**

Down on the BIOS

If you have to run the CMOS setup software to change your configuration, don't do it from WINDOWS or while running another application. It may corrupt CMOS.

AWARD BIOS PROCEDURES

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

ENTERING SETUP

Applying power to the computer and pressing [Del] immediately will allow you to enter Setup. Additionally, if your BIOS won't allow the system to boot, you can reset the BIOS to its default settings by pressing and holding down the C key immediately after applying power. Another way to enter Setup is to apply power to the computer, and then, when a message appears briefly at the bottom of the screen during the POST (Power On Self Test), press the [Del] key:

TO ENTER SETUP, PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON. You may also restart by simultaneously pressing [Ctrl], [Alt], and [Delete) keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

PRESS F1 TO CONTINUE, OR DEL TO ENTER SETUP

FieldWorks supplies a DOS utility, as well, to enter setup from the DOS C:\ command line. It is called, AWDSETUP.COM, and is located in the C:\UTIL directory. You can examine and modify CMOS memory, and these changes will take effect when you reboot the computer.

Control Keys

To move around in the menu, use the arrow keys. Press [Shift] [F2] to change color of the menu. Press [PgUp] or [PgDn] to modify the selection (choose another). Press [F1] if you need help.

THE MAIN MENU

The CMOS Main Setup Menu is the first screen you will see during power-up, when you press the [Del] key immediately after reboot is initiated (by pressing [Ctrl] [Alt] [Del] or turning power on).

Standard CMOS Setup

This setup page includes all the items in a standard compatible BIOS. (Descriptions begin on the next page.)

BIOS Features Setup

This setup page includes all the items of Award special enhanced features.

Chipset Features setup

This setup page includes all the items of chipset special features.

PCI Configuration Setup

This setup page includes all the items used to configure the PCI bus system.

Load BIOS Defaults

BIOS defaults indicates the most appropriate value of the system parameter which the system would be in minimum performance.

Load setup defaults

Chipset defaults indicates the values required by the system for the maximum performance.

Password setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

Save & exit setup

Save CMOS value changes to CMOS and exit setup.

Exit without save

Abandon all CMOS value changes and exit setup.

THE STANDARD CMOS SETUP MENU

The items in Standard CMOS Setup Menu include setting date and time, entering hard drive parameters, specifying floppy sizes/formats, selecting video, and selecting how to handle halt conditions. Use the arrow keys to highlight the item and then use the [PgUp] or [PgDn] keys to select the value you want in each item. These items are illustrated and discussed next. **Please be aware that modifying these parameter may cause the system or peripherals to become nonfunctional.**

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Sat, Jan 14 1995		CYLS.		HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Time (hh:mm:ss) : 18 : 25 : 46		0	0	0	0	0	0	AUTO
Drive C : Auto	< 0Mb>	0	0	0	0	0	0	AUTO
Drive D : Auto	< 0Mb>	0	0	0	0	0	0	AUTO
Drive A : 1.44M, 3.5 in.								
Drive B : None								
Video : EGA/UGA		Base Memory: 640K Extended Memory: 15360K Other Memory: 384K <hr/> Total Memory: 16384K						
Halt On : All Errors								
ESC : Quit		↑ ↓ → ← : Select Item		PU/PD/+/- : Modify				
F1 : Help		(Shift)F2 : Change Color						

Standard CMOS Setup Menu

Date

The date format is <day>, <date> <month> <year>. Press [F3] to see the calendar.

day	The day, the BIOS determines what day it is and displays it for you
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec
year	The year, from 1900 through 2099

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Drive C type/Drive D type

Installed hard drives or removeable hard drives do not require hard drive setup. Setup is done automatically by the system. However, if there is no hard drive, select "None". **For WINDOWS NT and OS2 users, you must select "none" if you don't have a D drive (others have had problems in the past when they select "auto" and there is no D drive).**

Drive A type/Drive B type

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer; however, since the single floppy drive is built-in, there is no need to change these parameters.

Video

Since SVGA is built in, there is no need to change these parameters.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Error halt

The category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All errors	The system boot will not be stopped for any error that may be detected.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

This information is displayed by POST (Power On Self Test) of the BIOS.

BIOS FEATURES SETUP MENU

This set-up screen is used to identify various characteristics of the system.

ROM PCI/ISA BIOS (V:1.1.0-....)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CFFFF Shadow	: Disabled
External Cache	: Enabled	D0000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D8000-DFFFF Shadow	: Disabled
Boot Sequence	: A,C	Cooling Fan	: Auto
Swap Floppy Drive	: Disabled	Onboard UGA Display	: Simul LCD/CRT
Boot Up Floppy Seek	: Enabled	UGA BIOS extension	: Enabled
Boot Up NumLock Status	: Off		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/UGA Palette Snoop	: Disabled		
		ESC : Quit	↑↓←→ : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 2. BIOS Features Setup Menu

The Onboard VGA Display selections in the second column can be Simul LCD/CRT (enable external VGA port as well as CRT panel), CRT only, and LCD Panel only.

Figure 2 shows also a line, "VGA BIOS extension = Enabled", which appears only if the computer has the Cirrus Video BIOS. When enabled, the video BIOS uses extra RAM in high memory (address range C8000 to CBFFF between 640 and 1M) for some VESA functions, DDC support, and extra fonts (size 8x14). Generally, it should be enabled (default); but, if another application or adapter card fails because of a conflict over this RAM region, you can free it up by disabling this setting.

Virus Warning

If enabled, this parameter will flash a message on the screen whenever it senses that an attempt to write to a critical area of the disk is being attempted. For example, during and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem.

! WARNING !

**Disk boot sector is to be modified
Type "Y" to accept write or "N" to
abort write Award Software, Inc.**

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

CPU Cache Enable

These two categories speed up memory access. The Internal cache is built into the CPU; External cache is a cache module that is installed or upgraded in the field. The default value is enabled.

Enabled	Enable cache
----------------	--------------

Disabled	Disable cache
-----------------	---------------

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some system check items during POST.

Enabled	Enable quick POST
----------------	-------------------

Disabled	Normal POST
-----------------	-------------

Boot Sequence

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). Default value is A, C.

A,C Search first for floppy drive, then hard drive.

C,A Search first for hard drive, then floppy

Swap Floppy Drive

This allows you to swap designations for your floppy. If enabled, you can designate a single floppy as A or B.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks. Make sure you chose correctly or it won't work.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
----------------	---

Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.
-----------------	---

Boot Up NumLock Status

The default value is OFF.

On	Keypad is number keys
-----------	-----------------------

Off	Keypad is arrow keys
------------	----------------------

Boot Up System Speed

The system is set to high speed.

High	Set the speed to high
-------------	-----------------------

Low	Set the speed to low
------------	----------------------

Gate A20 Option

This enable allows the user to slow down the A20 addressing of memory above 1M to accommodate earlier/slower software. These days, the chipset can handle the fast mode. But, if the older package is having trouble, you can set the Gate 20 access to Normal (slower).

Normal	keyboard
---------------	----------

Fast	chipset
-------------	---------

Memory Parity Check

Our SIMM chips do not include parity; therefore, this is setting is disabled at the factory. Should you replace the RAM having the extra parity bits, you could enable this setting.

Enabled	Normal memory parity check
----------------	----------------------------

Disabled	Ignore memory parity check
-----------------	----------------------------

Typematic Rate Setting

This enables you to set the typematic rate using the settings below. If this is disabled the typematic rate selected will be ignored.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Typematic Rate (Chars/Sec)

If the typematic rate setting is enabled (above), you can set or change the rate using this setting.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When holding down a key, the time between the first and second character displayed. Conversely, you can speed up the repeat character setting by selecting a lower delay.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press [Enter], it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

Video BIOS Shadow

By default, BIOS is always shadowed to RAM. (Executing from video ROM is slower than executing directly from RAM.) In addition, on-board VGA BIOS is always shadowed; therefore, the following is always enabled and selecting disabled has no effect.

Enabled
Disabled

C8000 - CFFFF Shadow/D8000 - D7FFF Shadow/D8000-DFFFF Shadow

These categories determine whether optional ROM will be copied to RAM by 32K byte. This has the same effect as copying system ROM to RAM, described above.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

CHIPSET FEATURES SETUP MENU

The Chipset Features Menu contains settings that allow you to configure the system based on the specific features of the installed chipset, including bus speeds and memory access timing. The chipset coordinates communications between the the PCI bus and the standard ISA bus. In this regard, none should be changed without a purpose. If you change a critical parameter and it locks up your system, you may have to discharge power from the CMOS battery to recover and start over. The default settings have been chosen because they provide the best operating conditions for your system.

MS-DOS Prompt
ROM PCI/ISA BIOS <00.00:-....>
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	Onboard FDC Controller	: Enabled
AT Bus Clock	: CLK2/6	Onboard Serial Port 1	: COM1/3F8
DRAM Access Timing	: Normal	Onboard Serial Port 2	: COM2/2F8
DRAM Posted Buffer Timing	: Normal	Onboard Parallel Port	: 378/IRQ7
SRAM Read Timing	: 1-Wait	Parallel Port Mode	: Normal
SRAM Write Timing	: 1-Wait	Parallel Port EPP Type	: EPP1.9
Hidden Refresh	: Enabled		
Slow Refresh	: 60 us		
16 Bit ISA I/O Command WS	: 2 Wait		
16 Bit ISA Mem Command WS	: 2 Wait		
Local Memory 15-16M	: Enabled		
CPU Pipelined Function	: Disabled		
On-Chip IDE Controller	: Enabled		
IDE Buffer for DOS & Win	: Enabled		
The 2nd channel IDE	: Enabled		
IDE HDD Block Mode	: Enabled		
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
		Config 5? Bit 1 :0	
		ESC : Quit	↑↓←→ : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	<Shift>F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Chipset Features Setup Menu.

Auto Configuration

By enabling the Auto Configuration, you will not need to individually configure various settings. This returns your system configuration to the highly optimized (and recommended) state it was delivered in.

AT-BUS Clock

The AT bus clock speed is the local speed at which the CPU communicates with memory. The speed is measured in terms of a fraction of CLK.

CLK2/4	2/4 CLK (fastest: 16.5 MHz)
CLK2/5	2/5 CLK (13.2. MHz)
CLK2/6	2/6 CLK -- (11 MHz) DEFAULT
CLK2/8	2/8 CLK (8.25 MHz)
CLK2/10	2/10 CLK (6.6 MHz)
CLK2/12	2/12 CLK (5.5 MHz)
7.19Mhz	(7.19Mhz)

DRAM Access Timing

This allows you to determine the type of timing the system uses when reading from or writing to DRAM. Care must be taken when attempting to improve system performance by selecting Fast because, if your DRAM cannot manage the access speed, data will be lost or the system will be forced to add additional wait states, slowing performance, in order to assure data integrity.

Selections are Fast, Normal (default) and Slow.

SRAM Read Timing

The SRAM read timing relates the number of wait states taken for the reads from the cache.

1 WS	Zero waits (Default)
2 WS	One wait state

SRAM Write Timing

Sets the timing, in CPU wait states, for writes to the external cache.

1 WS	Zero waits (Default)
2 WS	One wait state

Hidden Refresh

This setting for DRAM refresh enables a technique which allows CAS (a method for refreshing DRAM) to take place without using a CPU cycle. This is often referred to as "hidden" CAS and, in addition to being more efficient, it consumes less energy and maintains the status of the cache even during a power management cycle.

Enabled	Using hidden refresh
Disabled	Using normal refresh (Default)

Slow Refresh

This would be used if you were encountering data corruption because your DRAM was not fast enough to handle a faster timing. The timing is measured in micro seconds (μ s).

15 μ s	
30 μ s	
60 μ s	Default
120 μ s	

16 Bit ISA I/O Command WS

Your system quite possibly has much higher performance than some of your input/output (I/O) devices. This means that unless the system is instructed to allow more time, more wait states, for devices to respond, it might think the device has malfunctioned and stop its request for I/O. If all your I/O devices are capable, then disabling this setting could result in greater throughput. Otherwise, data could be lost.

Wait state choices are 1, 2 (default), 3 or Normal (0).

16 Bit ISA Mem Command WS

When memory is accessed on the ISA bus, the system must allow for the relatively slow speed of the ISA bus. This setting allows you to match the speed of device memory located on the ISA bus with the system ability to read/write to that memory.

Wait state choices are 1, 2 (default), 3 or Normal (0).

Local Memory 15-16M

To increase performance, your system can map slower device memory (usually a device is connected to the slower ISA bus) into much faster local bus memory. It does this by setting aside local memory and transferring the start point from the device memory to the local memory. Use this setting to enable/disable this capability. It is Enabled by default.

CPU Pipelined Function

This allows the system controller to signal the CPU for a new memory address even before all data transfers for the current cycle are complete, resulting in increased throughput.

Enabled	Address pipelining active
Disabled	No address pipelining (default)

Enhanced IDE Support

The next several settings allow you to configure the operating mode of the system IDE controller. Your system supports Enhanced IDE performance. This means that it provides for a second IDE channel supporting two additional IDE devices beyond the primary two devices. The second IDE channel is used for the CD-ROM unit.

The controller also supports high performance operation. This includes a block mode where larger than standard blocks of data can be moved to and from IDE devices (including EIDE CD-ROM devices). Also included are high performance Programmed Input/Output (PIO). PIO is divided into modes 1 through 4, each providing successively increased performance.

You will be allowed to set the PIO mode for each of the four IDE channels. This allows you to configure your system to the individual characteristics of each of your IDE devices.

On-Chip Local Bus IDE

We enable this feature because it is used for the installed hard drives. If you disable it, the factory installed hard drives won't work. If a separate IDE controller card is installed, you should disable the built-in controller.

Enabled	Onboard IDE controller active (Default)
----------------	---

Disabled	Either onboard IDE controller absent or not to be used.
-----------------	---

IDE Buffer for DOS & Windows

Your system provides both IDE read ahead and posted write buffers. This means that it can increase throughput to and from IDE devices by buffering reads and writes. On the other hand, slower IDE devices may be made even slower by enabling this.

Enabled	IDE read/write buffering (Default)
----------------	------------------------------------

Disabled	No IDE buffering
-----------------	------------------

The 2nd Channel IDE

Your system includes a second IDE channel supporting two additional IDE devices. This selection allows you to activate the second channel. (The second IDE channel is used for the built-in CD-ROM unit. The second IDE channel must be enabled when there is a CD-ROM drive.)

Enabled	Secondary IDE channel active (Default)
----------------	--

Disabled	Onboard support for the second IDE channel disabled.
-----------------	--

IDE HDD Block Mode

When enabled, this allows your hard drive system to use a mode where large blocks of data are transferred instead of smaller blocks.

Enabled	IDE block mode active (Default)
----------------	---------------------------------

Disabled	IDE block mode disabled.
-----------------	--------------------------

PIO

The next four selections allow you to set the PIO mode for all four IDE devices. Your IDE controller supports two channels, a Primary and a Secondary, and each channel supports two devices, a Master and a Slave.

Auto	The system will automatically determine what mode is appropriate for each device. (Default)
Mode 1 through Mode 4	You can force the system to attempt to use a given mode.

Onboard FDC Controller

If you add an external controller, you will need to disable this feature.

Enabled	Onboard floppy disk controller active (Default)
Disabled	Either onboard floppy disk controller absent or not to be used.

Onboard Serial Port 1

This allows you to determine how the serial port number one installed on your motherboard is to be configured.

COM1	3F8, IRQ 4
COM2	2F8, IRQ 3 (Default)
COM3	2E8, IRQ 3
COM4	3E8, IRQ 4
NONE	Serial port 1 disabled

Onboard Serial Port 2

This allows you to determine how the serial port number two installed on your motherboard is to be configured.

COM1	3F8, IRQ 4 (Default)
COM2	2F8, IRQ 3
COM3	2E8, IRQ 3
COM4	3E8, IRQ 4
NONE	Serial port 2 disabled

Onboard Parallel Port

This can be used to change the default port address of the onboard parallel (printer) port.

378H	Standard LPT1 address (Default)
278H	Standard LPT2 address
3BCH	Alternate LPT address
NONE	Printer parallel port disabled

Onboard Parallel Mode

This allows you to select the operation mode of the onboard printer port.

Normal	Standard parallel port mode (Default)
EPP	Bi-directional mode
ECP	Fast, buffered
EPP/ECP	Bi-directional and buffered

Parallel Port EPP Type

The parallel port is EPP compliant. This setting allows you to configure it to the requirements of your applications; however, you should be sure that your application can operate in that mode (check your application's documentation for bi-directional mode warnings). In general, there are two versions of the EPP specification, versions 1.7 and 1.9. In most cases, using the 1.9 version (the default) should be sufficient. If, however, your software requires the older type of EPP parallel port, you would use this to set it according to the 1.7 release.

POWER MANAGEMENT SETUP MENU

The Field WorkStation Power Management Setup allows you to configure your system to conserve energy, consistent with your operating preferences.

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disable	IRQ9 <IRQ2 Redir>	: OFF
PM Control by APM	: Yes	IRQ10 <Reserved>	: OFF
Video Off Option	: Always On	IRQ11 <Reserved>	: OFF
Video Off Method	: DPMS Support	IRQ12 <PS/2 Mouse>	: ON
** PM Timers **		IRQ13 <Coprocessor>	: OFF
HDD Power Down	: 2 Min	IRQ14 <Hard Disk>	: ON
Doze Mode	: Disable	IRQ15 <Reserved>	: ON
Standby Mode	: Disable		
Suspend Mode	: Disable		
** PM Events **			
UGA	: OFF	ESC : Quit	↑↓←→ : Select Item
DRQ	: ON	F1 : Help	PU/PD/+/- : Modify
IRQ3 <COM 2>	: ON	F5 : Old Values	<Shift>F2 : Color
IRQ4 <COM 1>	: ON	F6 : Load BIOS Defaults	
IRQ5 <LPT 2>	: ON	F7 : Load Setup Defaults	
IRQ6 <Floppy Disk>	: ON		
IRQ7 <LPT 1>	: ON		
IRQ8 <RTC Alarm>	: OFF		

Power Management Setup Screen.

Power Management Modes

There are four basic power modes:

- Doze Mode
- Standby Mode
- Suspend Mode
- HDD Power Down

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr.. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = Disable.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S. Doze Mode = 10 sec., Standby Mode = 10 sec., Suspend Mode = 10 sec., and HDD Power Down = Disable.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 10 sec. to 60 sec, except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control APM

When enabled, an Advanced Power Management device will be activated to enhance the Maximum Power Saving Mode and stop the CPU internal clock.

If the Maximum Power Saving is not enabled, this will be preset to *No*.

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode..

Always On	Monitor will remain on during power saving modes
Min. Power Saving	Suspend > minimum power management. Doze Mode = 1 hr., Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = Disable.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S. Doze Mode = 10 sec., Standby Mode = 10 sec., Suspend Mode = 10 sec., and HDD Power Down = Disable.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 10 sec. to 60 sec, except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Always On	Monitor will remain on during power saving modes.
Suspend _ Off	Monitor blanked when the systems enters the Suspend mode.
Susp,Stby _ Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes _ Off	Monitor blanked when the system enters any power saving mode.

Video Off Method

This determines the manner by which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen DPMS Support	This option only writes blanks to the video buffer. Desktop Power Management Systems are applications which perform power management functions for a given operating system. Enabling this entry leaves the video off method to the software.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at a slower speed while all other devices still operate at full speed.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

PM Events

Power Management events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode.

VGA

This gives you the choice of enabling VGA video refresh events as PM events.

Selections are *On/Off*. *Off* is the default.

DRQ

When *On*, the system will monitor system requests to move memory.

Selections are *On/Off*.

The following is a table of IRQ's, Interrupt **Re**Quests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*. *Off* is the default.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

Similar tables for DMA Usage, Memory Map, and I/O Port Usage appear at the end of Part I.

Table of IRQ Assignment Numbers.

IRQ Number	Use	Status
0	Timer	Permanent Assignment
1	Keyboard	Permanent Assignment
2	Cascaded to IRQ 8 - 15	Permanent Assignment
3	COM2	Permanent Assignment
4	COM1	Permanent Assignment
5	Unused	Available To User
6	Floppy Disk	Permanent Assignment
7	LPT1	Permanent Assignment
8	Real Time Clock	Permanent Assignment
9	Cascade From IRQ2	Permanent Assignment
10	Unused	Available To User Unless CD ROM or PCMCIA Are Installed
11	PCMCIA	Available To User Unless PCMCIA Slot Is Used
12	Mouse	Permanent Assignment
13	Math Coprocessor	Permanent Assignment
14	Hard Disk	Permanent Assignment
15	CD-ROM	Available To User

PCI CONFIGURATION SETUP

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

PnP BIOS Auto-Config

When this item is enabled, the Plug and Play BIOS will internally determine which IRQs are mapped to PCI devices. Only when disabled will the 1st/2nd/3rd/4th Available IRQ settings even appear in this Setup screen.

1st/2nd/3rd/4th Available IRQ

PCI interrupts must be mapped to standard IRQ's. PCI interrupts may be shared by other PCI devices but they may not be shared with other ISA devices. This options lets you choose which IRQ's are available for PCI adapters. See the file, TECHINFO.TXT, found in the root directory (C:\) of your hard drive for the IRQ usage for your installation. You can then choose IRQs that do not conflict with those already assigned.

PCI IDE 2nd Channel

Since your chipset supports a second IDE channel, you can use this selection to enable or disable the second channel

PCI IRQ Activated by

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer or you have installed a PCI device which only recognizes one of the choices.

Choices are *Level* (default) and *Edge*.

PCI to Mem. Write Buffer

When enabled, up to four Dwords of data can be written to memory from the PCI bus without interrupting the CPU. When disabled, this write buffer is not used and the PCI to memory write cycle will not be completed until the memory signals that it is no longer in use by the CPU and is ready to receive the data.

On	CPU writes are buffered, more data is written and the system operates faster.
Off	CPU writes are not buffered and the CPU is interrupted.

PCI to Memory Read Prefetch Buffer

When enabled, up to four words of data can be read from memory to the PCI bus without interrupting the CPU. When disabled, a read buffer is not used and the CPU read cycle will not be completed until the memory signals that it is no longer in use by the CPU and is ready to move data.

On	CPU reads are buffered, more data is read and the system operates faster.
Off	CPU reads are not buffered and the CPU is interrupted.

VGA Frame Buffer

Your system supports buffering which uses the VGA memory space A0000-BFFFFh.

Enabled	VGA memory space used as a buffer. (Default)
Disabled	VGA memory space not used for buffering.

Byte Merge for Frame Buffer

If the VGA frame buffer has been enabled, this item allows you to determine how efficiently the system can access that buffer. When "byte merge" is enabled, a succession of small read/write requests are merged into a single larger request for greater efficiency.

Enabled	Bytes (or words) are merged into Dwords. (Default)
Disabled	Byte or word read/write requests are passed along unchanged.

Fast Back-to-Back Cycle

When enabled, the PCI bus will interpret CPU read cycles as the PCI burst protocol. This means that back-to-back sequential CPU memory read cycles addressed to the PCI will be translated into the fast PCI burst memory cycles.

Enabled	PCI burst protocol used for successive PCI memory reads. (Default)
Disabled	Conventional read cycles are used.
Enabled	Consecutive write requests from the PCI bus interpreted as the PCI burst mode (Default).
Disabled	PCI burst mode must be explicitly requested by the bus.

PCI Write Burst

When enabled, this allows consecutive data sent from the PCI bus to be interpreted as the PCI Burst Mode. The chipset will then write larger streams of data at one time

Enabled	Consecutive write requests from the PCI bus interpreted as the PCI burst mode (Default).
Disabled	PCI burst mode must be explicitly requested by the bus.

Primary Frame Buffer

When enabled, this allows the system to use unreserved memory as a primary frame buffer. Unlike the VGA frame buffer, this buffer would reduce overall available RAM for applications.

Enabled	Primary frame buffer allocated from available RAM.
Disabled	No RAM used as a primary frame buffer (Default).

PCI Setup Menu

This menu allows you to establish interrupt request addresses (IRQ) for your installed PCI board applications. And while the ISA boards do not have a similar setup menu, being able to know the IRQ setting for PCI helps a good deal.

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP BIOS Auto-Config: <input checked="" type="checkbox"/>		PCI to Mem. Write Buffer : Enabled	
1st Available IRQ	: 10	PCI to Mem. Read Buffer	: Enabled
2nd Available IRQ	: 11	UGA Frame Buffer	: Enabled
3rd Available IRQ	: 9	Byte Merge for Frame buf.	: Enabled
4th Available IRQ	: 12	Fast-Back-to-Back Cycle	: Enabled
PCI IDE 2nd Channel	: Enabled	PCI Write Burst	: Enabled
PCI IRQ Activated By	: Edge	Primary Frame Buffer	: Disabled
PCI IDE IRQ Map To	: ISA		
		ESC : Quit	↑↓←→ : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

PCI Setup Menu

MISCELLANEOUS SETUP SCREENS

These are CMOS screens that generally don't require very many selections. Usually, when clicked, the screens bring up another message asking something, like "Load SETUP Defaults (Y/N)? N. This one especially is helpful if you have setup some wrong parameters and would like a chance to start from scratch.

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT SETUP	EXIT WITHOUT SAVING
PCI CONFIGURATION	Load SETUP Defaults (Y/N)? <input checked="" type="checkbox"/>
LOAD BIOS DEFAULT	
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	<Shift>F2 : Change Color
Load SETUP Defaults except Standard CMOS SETUP	

Load Defaults Setup Menu

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT SETUP	EXIT WITHOUT SAVING
PCI CONFIGURATION SETUP	
LOAD BIOS DEFAULTS	Enter Password:
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	<Shift>F2 : Change Color
Change/Set/Disable Password	

Password Setup Screen.

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Sat, Jan 14 1995							
Time (hh:mm:ss) : 18 : 25 : 46							
Drive C : Auto < 0Mb>	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	MODE	
Drive D : Auto < 0Mb>	0	0	0	0	0	AUTO	
Drive A : 1.44M, 3.5 in.							
Drive B : None							
Video : EGA/UGA							
Halt On : All Errors							
				Base Memory: 640K			
				Extended Memory: 15360K			
				Other Memory: 384K			
				Total Memory: 16384K			
ESC : Quit		↑ ↓ → ← : Select Item		PU/PD/+/- : Modify			
F1 : Help		<Shift>F2 : Change Color					

Standard CMOS Setup Menu

```

MS-DOS Prompt
ROM PCI/ISA BIOS (V0.0.0:-....)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

```

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT SETUP	EXIT WITHOUT SAVING
PCI CONFIGURATION	
LOAD BIOS DEFAULT	SAVE to CMOS and EXIT (Y/N)? █
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Save Data to CMOS & Exit SETUP	

Save and Exit

POST ERROR MESSAGES

If the Award BIOS encounters error condition(s) during POST, it will issue beep codes to the operator for non-fatal errors (or one beep for no errors), and POST codes to the operating system, which will then write appropriate message to the screen.

POST Beeps

The Award BIOS uses a series of beeps at POST to indicate the status of the boot process. They are as follows:

1 beep - No error during POST

1 long beep and 2 short beeps - Video Error

2 short beeps, for any non-fatal error, plus the following screen message prompt:

PRESS F1 KEY TO CONTINUE

One or more of the following messages may be displayed if the BIOS detects an error during the POST.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the controller adapter card is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize controller. Make sure the controller adapter card is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

I/O Channel Check - Checking for Segment xxxx

Indicates an I/O memory board error and is checking for the offending segment. This message is followed by one of the following messages:

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

I/O Parity Error - System Halted

Indicates a memory parity error at a specific location on an I/O memory board. You can use this location along with the memory map to find and replace the bad memory chips.

SUPPLEMENTAL INFORMATION

Autoexec.bat and Config.sys Files

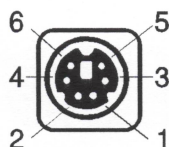
To aid installation, autoexec.bat and config.sys files are installed on the c: hard drive in a directory that identifies the language and keyboard of the various countries. The CMOS default settings are shown in illustrations in this section, with descriptions for each of their settings. Pin-outs for each of the interface connectors are provided also.

Interface Port Pin-Outs

The following information is provided to assist you with physical connections of the interface ports for the Field WorkStation.

Keyboard and Mouse Interface Connectors

The following illustration shows the pin-out of the external keyboard and mouse connectors. The external mouse and keyboard interfaces are interchangeable.

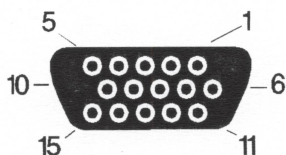


Pin	Assignment
1	Data
2	Not Used
3	Ground
4	+5VDC
5	Clock
6	Not Used

External Keyboard and Mouse Connector Pin-Out.

External SVGA Interface Connector

The following illustration shows the pin-out of the SVGA connector. The SVGA interface is also compatible with VGA monitors.

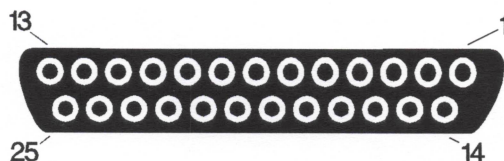


Pin	Assignment	Pin	Assignment
1	A Red	9	Not Used
2	A Green	10	VGA GND
3	A Blue	11	Not Used
4	Not Used	12	Not Used
5	VGA GND	13	HSD
6	Red GND	14	VSD
7	Green GND	15	Not Used
8	Blue GND		

External SVGA Connector Pin-Out.

Parallel Interface Connector

The following illustration shows the pin-out of the parallel interface connector. This bidirectional parallel interface is used as the default system printer. The parallel port supports EPP (Enhanced Parallel Port) operation.

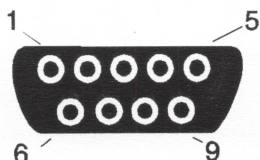


Pin	Assignment	Pin Assignment
1	Strobe	10 Acknowledge
2	Data Bit 0	11 Busy
3	Data Bit 1	12 Paper End
4	Data Bit 2	13 Select
5	Data Bit 3	14 Auto FD XT
6	Data Bit 4	15 Error
7	Data Bit 5	16 Initialize PRT
8	Data Bit 6	17 Select Input
9	Data Bit 7	18-25 Signal GND

External Parallel Connector Pin-Out.

Serial Interface Connector

The following illustration shows the pin-out of the serial interface connectors. The serial interface ports can be used for communicating with devices that follow the RS232 interface standard.

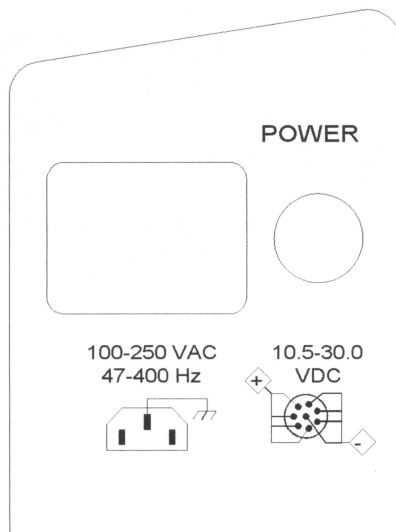


Pin	Assignment	Pin	Assignment
1	Carrier DET	6	Data Set RDY
2	Received Data	7	REQ To Send
3	Transmit Data	8	Clear To Send
4	Data Term RDY	9	Ring Indicator
5	Ground		

External Serial Connector Pin-Out.

Power (DC/AC) Connectors

The following figure shows the pin-outs of the AC and DC inputs of the Field WorkStation.



AC/DC Power Connection Pin-Outs.

System Hardware Assignments

The Field WorkStation, like all computer systems based on standard IBM compatible PC architecture, contains a set of user hardware & software configurable resources. Some of these resources are used by the system itself for various standard and optional features. Some of the system-used assignments can be modified by the user, and some cannot. The resources not used by the system can be left idle or assigned to user-installed facilities (i.e., ISA cards). This section describes the standard system resources, their use and assignment status. (Note: A similar table for IRQ assignments appears earlier in Part I immediately preceding PCI Configuration Setup.)

Memory Map Table.

Address	Use	Status
A000 - BFFF	Video RAM	Permanent Assignment
C000 - CBFF	Video BIOS	Permanent Assignment
CC00 - CCFF	PCMCIA Card Services	Permanent Assignment
CD00 - D0FF	PCMCIA Hard Drive	Permanent Assignment If Drive Is Installed Available To User If Drive Is Not Installed
EF00 - EFFF	Flash BIOS Extension	Permanent Assignment
F000 - FFFF	ROM BIOS	Permanent Assignment

Note: The shaded area assignments depend on size of video BIOS

DMA Channel Table.

DMA Channel	Use	Status
0	Memory Refresh	Permanent Assignment
1	Unused	Available To User
2	Floppy Disk	Permanent Assignment
3	Unused	Available To User
4	Controller 1 Cascade	Permanent Assignment
5	Unused	Available To User
6	Unused	Available To User
7	Unused	Available To User

I/O Port Table.

I/O Port	Use	Status
00 - 0F, 20 - 29, 40 - 43, 70 - 71, 80 - 8F, A0 - A1, C0 - DF	Chip Set Control	Permanent Assignment
100	Video	Permanent Assignment
160 - 16F	PCMCIA	Available to User*
1F0 - 1F7	Hard Disk	Permanent Assignment
2F8 - 2FF	COM2	Permanent Assignment
170 - 17F	CD ROM	Available To User**
3BC - 3BE	LPT1	Permanent Assignment
3BA, 3C0 - 3CA, 3CC,	Video	Permanent Assignment
3CE - 3CF, 3DA, 3D4 - 3D5		
3E0 - 3E1	PCMCIA	Permanent Assignment
3F0 - 3F7	Floppy Disk	Permanent Assignment
3F8 - 3FF	COM1	Permanent Assignment
CF8 - CFF	PCI Config. Space	Permanent Assignment

* Available to user unless PCMCIA installed.

** Available to user unless CD-ROM or PCMCIA installed.

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7631 Anagram Drive

Eden Prairie, MN 55344 USA

ISO 9000 certified

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One Year Warranty for:



7631 Anagram Drive
Eden Prairie, MN 55344

For technical assistance:
(612) 974-7200

For Your Records:

Product

Serial Number

Date of Purchase

PO Number



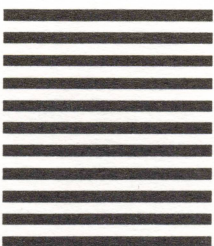
Fieldworks, Inc.
7631 Anagram Drive
Eden Prairie, MN 55344-9979

POSTAGE WILL BE PAID BY ADDRESSEE

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 2051 HOPKINS MN



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



One Year Limited Warranty

Fieldworks, Inc. warrants to the original owner that each of its products, and all components therein contained, will be free from defects in materials and/or workmanship for one year from the date of purchase.

In the event of malfunction or other indication of failure attributable directly to faulty workmanship and/or materials, then, upon return of the product with proof of date-of-purchase to Fieldworks, Inc., 9961 Valley View Road, Eden Prairie, MN 55344, Fieldworks Inc. will, at its option, repair or replace said products or components, to whatever extent it will deem necessary to restore said products to proper operating condition. During the first year after the date-of-purchase all labor and materials will be provided without charge. There shall be no warranty for either parts or labor after the expiration of one year from the date of purchase. Products that have been tampered with, abused, mishandled, deliberately altered or taken apart will not be covered by this warranty agreement. This is the customer's sole remedy for breach of warranty.

Units must be returned postage prepaid and insured. Units returned without proof of date-of-purchase, or out-of-warranty units returned, will be repaired or replaced (at the option of Fieldworks, Inc.) and the customer will be charged for repair costs.

Products will be returned to customer after repair or replacement has been completed, by carrier and method chosen by Fieldworks, Inc. Should the customer desire some other specific form of conveyance, or be located beyond the USA borders, then the customer must bear the costs of return shipment.

The responsibility for the failure of any Fieldworks, Inc. product, or component thereof, which in the discretion of Fieldworks, Inc., shall have resulted from accident, abuse, or misapplication of the product, shall be assumed by the customer, and Fieldworks, Inc. shall assume no liability as a consequence of such events under the terms of this warranty.

While every effort on the part of Fieldworks, Inc. has been made to provide clear and accurate technical information on the application of its products, Fieldworks, Inc. assumes no liability for any damage which may arise from the use of said technical information.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

There are no warranties given with respect to the products of Fieldworks, Inc. other than the warranty described above.

All other expressed or implied warranties are hereby disclaimed, including, but not limited to, warranty of merchantability or fitness for a particular purpose.

The warranty shall have no greater duration than the duration period for the express written warranty applicable to this product and shall terminate automatically at the expiration of such period. No action shall be brought for breach of any implied or express warranty after one year subsequent to the expiration of the duration period of the express written warranty.

Incidental and consequential damages caused by malfunction, defect or otherwise, and with respect to breach of any express or implied warranty, are not the responsibility of Fieldworks, Inc., and to the extent permitted by law, are hereby excluded both for property and for personal injury damage.

Name _____ Title _____ Company _____ Address _____ City _____ State _____ Zip _____ Country _____

Telephone _____ Fax _____ E-Mail _____ Purchased From _____ Address _____ City _____ State _____ Zip _____ Country _____

220-0004 rev B

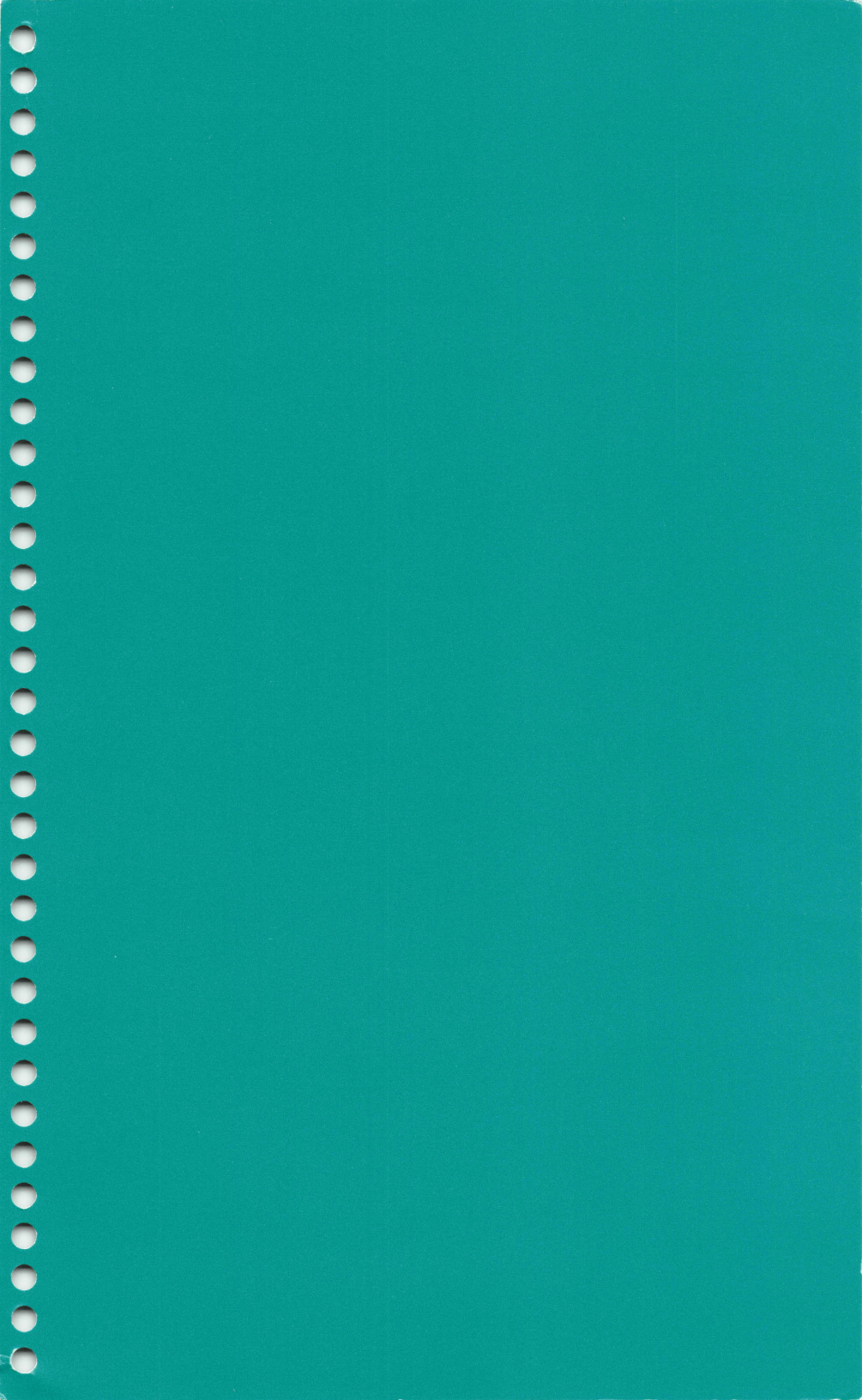
Software Update and Warranty Registration:

Notification of software and hardware changes, as well as warranty registration, will be provided to users who complete and mail this card.

Model Number _____

Serial Number _____

Date Purchased _____





7631 Anagram Drive • Eden Prairie, MN 55344, U.S.A.
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Sales/Customer Service: (800) 588-9144

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